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PRAKATA DARI PERSATUAN PSIKOLOGI MALAYSIA (PSIMA)



Assalamualaikum w.b.t dan salam sejahtera, Bersyukur ke hadrat Allah Swt. kerana dengan limpah kurnia-Nya Persatuan Psikologi Malaysia (PSIMA) dengan kerjasama Bahagian Psikologi JPA, Pusat Pengajian Psikologi dan Pembangunan Manusia, FSSK, UKM berjaya mengadakan Kongres Antarabangsa Psikologi Malaysia (MIPC) 2015. Saya amat berbangga atas usaha gigih dan semangat jitu yang ditunjukkan oleh Exco PSIMA, AJK dan sekretariat MIPC, JPA dan Pusat Pengajian Psikologi UKM dalam menganjurkan seminar sehingga berjaya diadakan hari ini. Tema “*Psychology for Human Wellbeing*” yang dipilih sangat bertepatan dengan isu-isu semasa pada masa kini. Dewasa ini dunia amnya diuji dengan

pelbagai kejadian bencana alam seperti banjir besar, tanah runtuh, kemarau, gempa bumi sebagainya. Disamping itu peperangan dan konflik antara kaum dan agama, ancaman IS dan sebagainya bersilih ganti. Negara kita tidak terkecuali dari diuji dengan banjir besar pada December 2014, keadaan ekonomi yang merudum dan kenaikan harga barang dan pengenalan cukai GST, suasana politik yang tidak menentu, isu keselamatan dan seumpamanya telah menyebabkan ramai individu mengalami kesan psikologi dan terdedah kepada pelbagai penyakit mental dan terpaksa merujuk kepada pakar psikologi. Namun sehingga kini Psikologi sebagai satu bidang profesional belum mempunyai akta tersendiri yang boleh mengawal selia ahli-ahlinya serta meningkatkan kualiti perkhidmatan untuk klien. Sehubungan itu PSIMA sedang giat berusaha untuk menubuhkan akta psikologi dalam sedikit masa lagi. Melalui kesempatan ini juga saya menyeru ahli-ahli psikologi yang masih belum mendaftar sebagai ahli PSIMA boleh berbuat demikian, di samping dapat mengambil peluang mengeratkan hubungan profesional dengan ahli psikologi dari dalam dan luar negara. Sekali lagi saya ingin mengucapkan setinggi-tinggi penghargaan dan jutaan terimakasih kepada Jawatankuasa Penganjur dan semua ahli jawatankuasa yang secara langsung atau tidak langsung terlibat dalam menjayakan seminar ini. Penghargaan turut dirakamkan kepada pihak JPA yang telah sudi menyumbang program *Diner talk* untuk seminar ini. Akhir sekali adalah menjadi harapan saya semoga MIPC akan menjadi acara dwi-tahunan dan akan terus hidup sebagai landasan untuk ahli psikologi di Malaysia.

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**FACTOR STRUCTURE OF THE STUDENT ENGAGEMENT INSTRUMENT AMONG
MALAYSIAN UNDERGRADUATES**

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ABSTRAK

Keterlibatan pelajar telah diketahui secara positif berkaitan dengan prestasi akademik, tetapi terdapat kekurangan kajian yang menyerlahkan fenomena ini di kalangan mahasiswa Malaysia. Kajian ini bertujuan untuk mengkaji struktur faktor *Student Engagement Instrument* (SEI) dengan sampel pelajar di Malaysia. Alat kajian telah ditadbirkan kepada 290 pelajar ijazah dari Fakulti Ilmu Wahyu dan Sains Kemanusiaan dan Fakulti Ekonomi dan Sains Pengurusan Universiti Islam Antarabangsa Malaysia. Ekstraksi *principal axis factor* dengan putaran Promax telah digunakan dalam analisis faktor penerokaan (*Exploratory Factor Analysis*) dan mendedahkan satu penyelesaian enam faktor yang konsisten dengan struktur faktor yang terdapat dalam kajian asal oleh Appleton et al. (2006). Faktor baru yang dinamakan kepunyaan tidak dibincangkan dalam kajian sebelum ini telah ditemui dan patut diterokai.

Katakunci: keterlibatan, struktur factor, mahasiswa, analisis faktor

ABSTRACT

Student engagement has been known to be positively associated with academic performance, but there has been a lack of studies that highlight this phenomenon among Malaysian undergraduates. This study seeks to examine the factor structure of the Student Engagement Instrument (SEI) in a Malaysian sample. The scale was administered to 290 undergraduate students from the Faculty of Islamic Revealed Knowledge and Human Sciences as well as the Faculty of Economics and Management Sciences of the International Islamic University of Malaysia. Principal axis factor with Promax rotation was used in exploratory factor analysis (EFA) and revealed a six-factor solution that was consistent with the factor structure found in the original study by Appleton et al. (2006). A new factor labelled belongingness which was not discussed in previous studies was also discovered, which is worth exploring.

Keywords: engagement, factor structure, undergraduates, factor analysis

INTRODUCTION

In this day and age of globalisation, education plays a crucial role in the development of human capital and is also a means of making a better living (Battle & Lewis, 2002). This is because the knowledge and skills acquired paves the way for individuals to venture into opportunities that may improve their quality of life. On a larger scale, education can also positively contribute to the overall economic growth of an entire nation (Saxton, 2000). Hence, students are an invaluable asset to the country as their academic performance is pivotal in generating quality graduates that will contribute to a nation's progress and development in the long run.

As such, a student's academic performance is a key indicator in measuring a graduate's employability or worth in the workforce (Norhidayah, Kamaruzaman, Syukirah, Najah, & Azni, 2009). Therefore, students must strive to the fullest of their abilities in ensuring that they meet the expectations of future employers by acquiring the best grades possible as to cement their value in society. In Malaysia, previous researches have evaluated academic performance based on the Cumulative Grade Point Average (CGPA) of the students (Ervina & Othman, 2005; Manan & Mohamad, 2003; Agus & Makhbul, 2002). Studies done in the United States and many other countries have also evaluated student performance based on CGPA (Amy, 2000; Stephens & Schaben, 2002; Broh, 2002; Nonis & Wright, 2003; Darling, Caldwell, & Smith, 2005; Galiher, 2006). CGPA is an objective measure of assessing the overall progress and academic performance as it takes into consideration the average grade throughout the entire duration of study within a university (Norhidayah et al., 2009). As such, higher learning institutions, educators, and policy makers are constantly on the lookout for means of enhancing a student's success and addressing issues of low performance and alienation in the classroom (Fredricks, Blumenfeld, & Paris, 2004). By setting the CGPA as the yardstick of academic performance, this can help to distinguish between high-achieving and low-achieving students in order to create interventions when necessary.

There are many factors that influence a student's performance in the classroom. These include student factors, family factors, school factors, and peer factors (Crosnoe, Johnson, & Elder, 2004). Among them, student engagement has been found to be among the key predictors of student performance as high levels is acknowledged to have a significant positive impact on student learning and outcomes. (Finn & Voekl, 1993; Jimerson, Campos, & Grief, 2003; Fredricks et al. 2004; Carini, Kuh, & Klein, 2006; Kuh, Cruce,

Shoup, Kinzie, & Gonyea, 2007; Glanville & Wildhagen, 2007; Harper & Quaye, 2009). According to Kuh (2009), student engagement is generally defined as “the term usually used to represent constructs such as quality of effort and involvement in productive learning activities” (p. 6). To put it simply, engagement is represented by the active involvement in a specific task or activity (Reeve, Jang, Carrell, Jeon, & Barch, 2004).

However, there are large variations in the conceptualisation and subcomponents of this particular construct (Appleton, Christenson, & Furlong, 2008; Fredricks et al., 2004; Jimerson et al., 2003). Among them include a two-dimensional model consisting behaviour and emotion (Finn, 1989; Newmann, Wehlage, & Lamborn, 1992; Marks, 2000; Skinner, Marchand, Kindermann, & Furrer, 2008), a three-dimensional model which is comprised of behavioural, cognitive, and emotion (Archaumbault, 2009; Wigfield et al., 2008; Fredricks et al., 2004; Jimerson et al. 2003), and lastly, a four-dimensional model which includes academic, behaviour, cognitive, and psychological dimensions of engagement (Appleton, Christenson, Kim, & Reschly, 2006; Reschly & Christenson, 2006). Despite these varied interpretations, the aforementioned scholars are in agreement that engagement is indeed a multidimensional construct.

Behavioural engagement is represented by the participation in academic, social, or extracurricular activities and is regarded as important in obtaining positive outcomes (Connell & Wellborn, 1991; Finn, 1989), and may also include positive conduct such as adhering to rules and avoiding disruptive behaviour (Finn, Pannozzo, & Voekl, 1995; Finn & Rock, 1997). Emotional engagement on the other hand, emphasises on the students’ feelings and reactions, be it positive or negative, toward instructors, classmates, academics, or school (Finn, 1989; Voekl, 1997). Positive emotional ties have been linked with inculcating the desire to engage in work (Connell & Wellborn, 1991; Finn, 1989). Next, cognitive engagement is described as the degree of investment in learning. It is comprised of being attentive and the willingness to exert the required effort for the completion of a task (Corno & Mandinach, 1983; Meece, Blumenfeld, & Hoyle, 1988; Fredricks et al., 2004).

Most researches have placed an emphasis on the behavioural aspect as opposed to cognitive and affective aspects as it is an empirical and observable measure of engagement. Nevertheless, there is evidence to suggest that the cognitive and emotional aspects are also pertinent and significant in dealing with academic performance. A relationship exists between cognitive engagement and investment in learning (Pokay & Blumenfeld, 1990; Greene & Miller, 1996; Greene, Miller, Crowson, Duke, & Akey, 2004) which consequently, is related with academic achievement (Miller, Greene, Montalvo, Ravindran, & Nichols, 1996). Correspondingly, emotional engagement is linked with positive school-related behaviours such as task persistence, participation, and attendance (Goodenow, 1993). These findings stipulate that apart from behaviour, cognitive and affective indicators are vital in the understanding of engagement among students. Among the established self-report instruments used to measure academic engagement include the Student Engagement Instrument (SEI), the Rochester Assessment Package for Schools (RAPS), Fredricks, Blumenfeld, Friedel, and Paris’ (2002) engagement scale, the Community College Survey on Student Engagement (CCSSE), and the National Survey on Student Engagement. The Student Engagement Instrument (SEI) has been validated and middle and high school students in measuring cognitive and emotional engagement (Appleton et al. 2006). Besides that, the Rochester Assessment Package for Schools (RAPS) is widely used among elementary schools to measure behavioural and emotional engagement. The engagement scale by Fredricks et al. (2002) has also been used to measure engagement among elementary school students. Moreover, the Community College Survey on Student Engagement (CCSSE) is an online instrument that is administered annually among community college students. The National Survey on Student Engagement (NSSE) is also annually administered in assessing engagement among college students.

The Student Engagement Instrument (SEI) (Appleton & Christenson, 2004) was developed by reviewing pertinent literature. Key words such as engagement, cognitive engagement, and psychological engagement were among the terms included in the literature search. In the construction of the scale, a detailed scale blueprint was created to capture the conceptualisations of cognitive and psychological engagement as discussed in previous literature. These conceptualisations were accumulated by reviewing already existing scales and studies that were associated with engagement. Moreover, a preliminary scale was constructed and was further modified as literature was updated. A pilot was conducted among 31 eighth grade students who provided feedback on the clarity of the items which were then modified accordingly.

Since the Student Engagement Instrument (SEI) measure the cognitive and emotional engagement of students (Appleton et al., 2006), it is the ideal instrument to be used in this study. According to Appleton et al. (2006), there is a positive relationship between most SEI factors and academic indicators such as GPA. As such, the use of this instrument may be relevant to measure educational outcomes once validated among a Malaysian sample.

Problem Statement

It has already been established that student engagement is an important predictor of a student’s academic achievement be it in a school or a university setting (Carini, Kuh, & Klein, 2006; Kuh, Cruce, Shoup,

Kinzie, & Gonyea, 2007; Glanville & Wildhagen, 2007). However, there is a lack of studies that used the Student Engagement Instrument (SEI) in measuring the degree of engagement among Malaysian undergraduates. There is currently no established instrument to assess student engagement in this context (Md Jaafar, Awang Hashim, Ariffin, & Faekah, 2012).

Purpose of the Study

The purpose of this study is to identify the factors of student engagement that exist among Malaysian undergraduate students. This is to understand and gain an insight on the usability of the SEI on a Malaysian sample. Consequently, the instrument can then be used in studies that seek to identify outcomes of student engagement.

RESEARCH QUESTION

For the purpose of this study, the following research question is formulated; how many factors exist within a Malaysian sample of the Student Engagement Instrument? It is expected that the number of factors would remain the same as previous studies that analysed the factor structure of the Student Engagement Instrument.

Review of Student Engagement Instrument

In this study, the literature review was divided into two sections: Psychometric properties and the factor structure of the SEI.

Psychometric Properties of the Student Engagement Instrument

To estimate how well the factors are interdependent of each other, coefficient alphas (α) were calculated across samples for the overall internal consistency as well as for each subscale (i.e., Teacher-Student Relationships, Peer Support for Learning, Control and Relevance of Schoolwork, Family Support for Learning, and Extrinsic Motivation) across various studies. The results of these reliability estimates were summarised in Table 2.1.

Appleton et al. (2006) found that each subscale demonstrated acceptable to good reliability (range $\alpha = .72 - .88$). These results were also similar to Lovelace et al. (2010) across three different samples (range $\alpha = .75 - .88$) whereas its overall score exhibits very high internal consistency (range $\alpha = .91 - .92$). In Grier-Reed, Appleton, Rodriguez, Ganuza, and Reschly (2012) the reliability estimates range from $\alpha = .79 - .85$ and the overall score $\alpha = .91$ which is also adequate.

In Appleton et al. (2006), the sample used was 1,931 ninth grade students from urban schools in the upper Midwest, United States of America whereas Lovelace, Reschly, Appleton, and Lutz (2010) had a total of 57,766 participants who were composed of sixth to twelfth grade students. However, his participants were divided into three separate samples; Sample 1, Sample 2, and Sample 3. Sample 1 represented 53,407 normal students whereas Sample 2 consisted of 3,406 students with special needs or disabilities, and Sample 3 composed of 953 school dropouts. Grier-Reed et al. (2012) used a sample of 122 undergraduates from a university in the Midwestern United States.

Table 1

Internal consistency estimates for overall SEI scores and subscales by sample

Authors	Sample	Coefficient Alpha (α)						
		Overall	TSR	CRSW	PSL	FG	FSL	EM
Appleton et al. (2006)	Sample 1	-	.88	.80	.82	.78	.76	.72
Lovelace, Reschly, Appleton, and Lutz (2010)	Sample 1	.92	.88	.81	.82	.80	.77	-
	Sample 2	.92	.87	.81	.82	.78	.75	-
	Sample 3	.91	.86	.80	.78	.83	.78	-
Grier-Reed, Appleton, Rodriguez, Ganuza, and Reschly (2012)	Sample 1	.91	.85	.78	.82	.79	.79	-
TSR = Teacher-Student Relationships		PSL = Peer Support for Learning						
CRSW = Control and Relevance of Schoolwork		FSL = Family Support for Learning						
FG = Future Goals and Aspirations		EM = Extrinsic Motivation						

Based on Table 2, Appleton et al. (2006) found moderate correlations ($r = .284 - .506$, mean $r = .404$) among the five SEI factors. The correlation between Control and Relevance of Schoolwork and Future Goals and Aspirations ($r = .506$) was the strongest, and was considered moderately strong. This suggests that each factor adequately measured either cognitive or psychological engagement to a certain

degree. There were also small correlations ($r = .001 - .253$, mean $r = .120$) between the SEI factors and educational outcomes such as GPA.

Table 2

Correlations between factors (Appleton et al., 2006)

Scale	1	2	3	4	5
1. TSR					
2. CRSW	.471				
3. PSL	.443	.322			
4. FG	.353	.506	.284		
5. FSL	.389	.462	.344	.469	
6. EM	.158	.182	.073	.285	.199
TSR = Teacher-Student Relationships			PSL = Peer Support for Learning		
CRSW = Control and Relevance of Schoolwork			FSL = Family Support for Learning		
FG = Future Goals and Aspirations			EM = Extrinsic Motivation		

Based on Table 3, all subscales were significantly positively correlated albeit not strong ($p < .01$). The correlations ranged from $r = .23 - .62$. The strongest correlations were exhibited between Teacher-Student Relationships and Control and Relevance of Schoolwork ($r = .62$) and between Control and Relevance of Schoolwork and Future Goals and Aspirations ($r = .60$), which indicated moderate levels of strength (Arballo, 2011).

Table 3

Correlations between factors (Arballo, 2011)

Scale	1	2	3	4
1. TSR				
2. CRSW	.62**			
3. PSL	.42**	.35**		
4. FG	.43**	.60**	.23**	
5. FSL	.29**	.23**	.25**	.29**

** $p < .01$, * $p < .05$

TSR = Teacher-Student Relationships

PSL = Peer Support for Learning

CRSW = Control and Relevance of Schoolwork

FSL = Family Support for Learning

FG = Future Goals and Aspirations

Based on Table 2.4, within-SEI correlations ranged from $r = .23 - .58$, with the relationship between Teacher-Student Relationships and Control and Relevance of Schoolwork exhibiting the strongest correlation ($r = .58$), followed by Teacher-Student Relationships and Peer Support for Learning ($r = .53$).

Table 4

Correlations between factors (Grier-Reed, Appleton, Rodriguez, Ganuza, & Reschly, 2012)

Scale	1	2	3	4
1. TSR				
2. CRSW	.58*			
3. PSL	.53*	.49*		
4. FG	.33*	.52*	.36*	
5. FSL	.23	.24	.43*	.38*

* $p < .05$

TSR = Teacher-Student Relationships

PSL = Peer Support for Learning

CRSW = Control and Relevance of Schoolwork

FSL = Family Support for Learning

FG = Future Goals and Aspirations

In Table 5, it can be seen that the correlations between subscales ranged from $r = .25 - .58$. Among each subscale, Future Goals and Aspirations and Family Support for Learning exhibited the strongest correlation ($r = .58$) whereas Teacher-Student Relationships and Family Support for Learning were the weakest ($r = .25$).

Table 5

Correlations between factors (Grier-Reed, Appleton, Rodriguez, Ganuza, & Reschly, 2012)

Scale	1	2	3	4
1. TSR				
2. CRSW	.56**			
3. PSL	.36**	.42**		
4. FG	.29**	.48**	.45**	

5. FSL	.25**	.36**	.41**	.58**
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** $p < .01$, * $p < .05$

TSR = Teacher-Student Relationships

PSL = Peer Support for Learning

CRSW = Control and Relevance of Schoolwork

FSL = Family Support for Learning

FG = Future Goals and Aspirations

Factor Structure of the Student Engagement Instrument

According to Appleton et al. (2006) the factor structure of the SEI was ascertained by exploratory factor analysis from a sample of 1,931 ninth grade students from urban schools in the upper Midwest, United States of America using principal axis factoring with Promax rotation. Furthermore, decisions about which items to omit were made through reviewing four, five, and six-factor structures with exploratory factor analysis until all items were at least loaded at .40. Appleton et al. (2006) discovered five and six-factors within the SEI that fit the data well. Analysis of items encompassing each SEI factor discovered little cross-loading, indicating that each factor has a unique attachment to either a psychological or cognitive engagement subtype.

Betts, Appleton, Reschly, Christenson, and Huebner (2010) later replicated the study and conducted exploratory factor analysis on a sample of 2,416 sixth to twelfth grade students from schools in Southeastern and Upper Midwestern United States (Betts et al., 2010; Carter, Reschly, Lovelace Appleton, & Thompson, 2012). Exploratory factor analysis (EFA) with oblique rotations analysed the nine-factor structure. With a Comparative Fit Index of .95 and a Root Mean Square Error of Approximation at .05 or below set as the statistical criteria, a five-factor model was suggested as a good fit for the data.

Arballo (2011) applied principal axis factor with Varimax rotation on a sample of 184 high school students. Five factors were found as a result of this analysis. The five-factor structure consisted of three emotional engagement subscales and two cognitive engagement subscales

The same five-factor model from the original SEI was reported to fit consistently well across various studies. The five subscales identified include Teacher-Student Relationships, Control and Relevance of School Work, Peer Support for Learning, Future Aspirations, and Family Support for Learning while excluding Extrinsic Motivation.

METHOD

Pilot Studies

After adapting the items on the SEI as required, a pilot study was first conducted among 10 undergraduate psychology students in order to determine if the revised items on the instruments were understandable. It was found that items 7, 9, and 17 were the most perplexing and problematic. As such, the items had to be revised. The changes are as summarised in Table 6.

Table 6

Original and revised items of the SEI based on initial pilot study

Items	Original	Revised
7	Students at my university are there for me when I need them.	Students at my university help me when I am in need.
9	Most of what is important to know, you learn in university.	In university, you learn most of the important things to know.
17	I plan to continue my education following university.	I plan to continue my education after graduating from university.

A second pilot study was then conducted among 74 undergraduate psychology students to gather information on the reliability and validity of the SEI. The reliability estimates of the SEI based on the second pilot study were summarised in Table 7. The results showed that the SEI has sufficient internal consistency, with an overall Cronbach alpha (α) value of .900. The six factors' internal consistency were also acceptable: Factor 1 (Teacher-Student Relationships, $\alpha = .842$), Factor 2 (Control and Relevance of School Work, $\alpha = .784$), Factor 3 (Peer Support for Learning, $\alpha = .581$), Factor 4 (Future Aspirations and Goals, $\alpha = .688$), Factor 5 (Family Support for Learning, $\alpha = .774$), and Factor 6 (Extrinsic Motivation, $\alpha = .743$).

Table 7

Internal consistency estimates for pilot study

Scale	No. of items	Coefficient Alpha (α)
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Overall	35	.900
TSR	9	.842
CRSW	9	.784
PSL	6	.581
FG	5	.688
FSL	4	.774
EM	2	.743

TSR = Teacher-Student Relationships

PSL = Peer Support for Learning

CRSW = Control and Relevance of Schoolwork

FSL = Family Support for Learning

FG = Future Goals and Aspirations

EM = Extrinsic Motivation

Participants

A total of 290 Malaysian students of the International Islamic University of Malaysia (N = 290) were selected as the sample for this study. The sample included students from the Faculty of Islamic Revealed Knowledge and Human Sciences ($n = 186$) as well as the Faculty of Economics and Management Sciences ($n = 95$). The participants were comprised of both males ($n = 84$) and females ($n = 194$). They were selected via convenience sampling.

Table 8

Demographic background of the participants

Demographic variables	Mean (SD)	N	%
Age	22.32 (1.178)		
Gender			
Male		84	29
Female		194	66.9
Programme			
IRKHS		186	64.1
ECONS		95	32.8

Instrument

The Student Engagement Instrument (SEI) consisted 35 items that measure the cognitive and emotional engagement of students (Appleton et al., 2008). According to Betts et al. (2010), these items account for the six factors related to engagement, which are Teacher-Student Relationships (TSR – Nine items), Control and Relevance of School Work (CRSW – Nine items), Peer Support at School (PSL – Six items), Future Aspirations and Goals (FG – Five items), Family Support for Learning (FSL – Four items), and Extrinsic Motivation (EM – Two items). Out of all these factors, TSR, PSL, and FSL measure emotional engagement whereas CRSW and FG measure cognitive engagement. All items were in the form of a four-point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree’.

In addition, to adapt this instrument for university students, some of the words were attuned in accordance to the suitability of the context. For example, the word “school” was substituted with “university”, “schoolwork” was changed with “assignments”, whereas “adults” and “teachers” were replaced with “lecturers”. The revised terms can be seen in Table 9 below.

Table 9

Original and revised terms of the SEI

Original	Revised
School	University
Schoolwork	Assignments
Adults	Lecturers
Teachers	Lecturers

Data collection and analysis

The Student Engagement Instrument (SEI) was individually administered to 290 students from the Faculty of Islamic Revealed Knowledge and Human Sciences as well as the Faculty of Economics and Management Sciences of the International Islamic University of Malaysia via convenience sampling. The data was analysed using the Statistical Package for Social Sciences (SPSS). Exploratory factor analysis (EFA) and principal axis factor with Promax rotation was the method used to extract the factors from the SEI. This method was also used by Appleton et al. (2006) in determining the factor structure of the SEI.

RESULTS

In this study, the results section is divided into three sections: Internal reliability of SEI, inter-factor correlation, and exploratory factor analysis.

Internal Reliability of SEI

Table 10

Internal consistency estimates for overall SEI scores and subscales by sample

Scale	No. of items	Coefficient Alpha (α)
Overall	35	.878
TSR	9	.721
CRSW	9	.751
PSL	6	.720
FG	5	.627
FSL	4	.744
EM	2	.758

TSR = Teacher-Student Relationships

PSL = Peer Support for Learning

CRSW = Control and Relevance of Schoolwork

FSL = Family Support for Learning

FG = Future Goals and Aspirations

EM = Extrinsic Motivation

Table 10 showed that the SEI has sufficient internal consistency, with an overall Cronbach alpha (α) value of .878. The six factors' internal consistency were also acceptable: Factor 1 (Teacher-Student Relationships, $\alpha = .721$), Factor 2 (Control and Relevance of School Work, $\alpha = .751$), Factor 3 (Peer Support for Learning, $\alpha = .72$), Factor 4 (Future Aspirations and Goals, $\alpha = .627$), Factor 5 (Family Support for Learning, $\alpha = .744$), and Factor 6 (Extrinsic Motivation, $\alpha = .758$). With the adequate internal consistency, the SEI would be able to be used in order to analyse its factor structure.

Inter-factor correlation

Based on Table 11, the inter-factor correlations were in the expected directions as each of the factors are positively correlated to one another. However, it was found that Extrinsic Motivation was negatively correlated with Teacher-Student Relationships, Control and Relevance of Schoolwork, and Future Goals and Aspirations. In addition, the analysis highlighted the lack of relationship between Extrinsic Motivation and Peer Support for Learning as well as Family Support for Learning. The correlation between Control and Relevance of Schoolwork and Future Goals and Aspirations ($r = .623$) was the strongest, and was considered moderately strong.

Table 11

Inter-factor correlations of the SEI

Scale	1	2	3	4	5
1. TSR					
2. CRSW	.501**				
3. PSL	.576**	.438**			
4. FG	.467**	.623**	.393**		
5. FSL	.362**	.479**	.420**	.485**	
6. EM	-.157**	-.133*	-.96	-.134*	-.107

** $p < .01$, * $p < .05$

TSR = Teacher-Student Relationships

PSL = Peer Support for Learning

CRSW = Control and Relevance of Schoolwork

FSL = Family Support for Learning

FG = Future Goals and Aspirations

Exploratory Factor Analysis

The EFA was done on 290 participants. Principal Axis Factor with Promax rotation was the method of extraction used. A variance explained of 23.162% was the result of a preliminary extraction with a forced one factor solution, indicating the lack of Common Method Bias. The data was suitable to be analysed via EFA (adequate sample size – KMO = .856, test of Sphericity – $p < .0001$). This method was suggested by Appleton et al. (2006) who used principal axis factoring with Promax rotation to extract the factors. In addition, items that loaded less than .40 were removed. As such, .40 was set as the minimal criterion for the loaded items to be accepted.

The analysis yielded a nine-factor solution that explains 46.927% of the variance. Examination of the pattern matrix in Table 12 showed good clustering of items except for items that loaded on Factor 1 and 8 as it contained items from various sub-scales. Furthermore, factors with less than three items loaded were removed due to poor factor over-determination (Factors 6, 7, and 9). The resulting analysis yielded a six-factor solution. Further discussion about the factors are mentioned in the Discussion chapter.

Table 12
Factor loading in Student Engagement Instrument (SEI)

Items	Factor									Communality
	1	2	3	4	5	6	7	8	9	
FG30	.731									.461
CRSW34	.621									.569
FSL29	.498		.448							.522
FG17	.458									.206
FG8	.439									.372
FG11	.424									.362
CRSW33										.361
FG19										.385
CRSW9										.493
TSR13										.305
TSR5		.712								.476
TSR21		.667								.551
TSR31		.564								.552
TSR10		.541								.244
TSR3		.460								.479
FSL20			.700							.644
FSL1			.692							.502
FSL12			.446							.440
PSL6				.773						.570
PSL4				.611						.386
PSL7				.573						.565
PSL14				.459						.400
CRSW26					.803					.587
CRSW35					.767					.527
CRSW25					.457					.387
EM18						-.808				.680
EM32						-.695				.545
TSR16										.165
CRSW2							.683			.510
CRSW15							.628			.595
TSR27										.331
PSL23								.661		.556
TSR22								.554		.661
PSL24								.448		.420
CRSW28									.854	.615

DISCUSSION

This study focused on the factor structure of the SEI among Malaysian university students. Based on the EFA, nine factors were initially discovered after setting .40 as the minimum requirement for items to load. Due to factor over-determination, items from Factor 6, 7, and 9 were removed as too few items loaded. This strategy was also adopted by Appleton et al. (2006). Out of 35 items, six items did not load in any factor. These items were Item 9, 13, 16, 19, 27, and 33. As a result, six-factors remained. This finding replicates the number of factors found in Appleton et al. (2006). However, unlike Appleton et al. (2006), items under Extrinsic Motivation did not load in this study. This finding is in line with previous studies as it was also found that Extrinsic Motivation was removed because too few items loaded as well as being negatively correlated with other subscales (Lovelace et al., 2010; Arballo, 2011; Grier-Reed et al., 2012).

Factor 1 was mostly composed of items from the subscale Future Goals and Aspirations. However, items 34 and 29 from Control and Relevance of Schoolwork and Family Support for Learning respectively were also included. It was understandable that item 34 “What I’m learning in my classes will be important in my future” was grouped into this factor as it related to the student’s perception of the future. Contrastingly, it was not clear how Item 29 “My family/guardian(s) want me to keep trying when things are tough at university” could be grouped into the Future Goals and Aspirations factor.

Factors 2, 3, 4, and 5 were maintained as the original factor structure of the SEI. They were labelled as Teacher-Student Relationships, Family Support for Learning, Peer Support for Learning, and Control and Relevance of School Work respectively. However, the number of items loaded were not the same as

previous studies. In Factor 2 (Teacher-Student Relationships), only five out of nine items loaded whereas Appleton et al. (2006) had six, Betts et al. (2010) had nine, both Arballo (2011) and Waldrop (2012) had eight. In Factor 3 (Family Support for Learning), three out of four items loaded whereas all four items loaded in previous studies (Appleton et al., 2006; Betts et al., 2010; Arballo, 2011; Waldrop, 2012). In Factor 4 (Peer Support for Learning), four out of six items loaded whereas all six factors loaded in Appleton et al. (2006), Betts et al. (2010), and Arballo (2011), but in Waldrop (2012), only three items loaded. In Factor 5 (Control and Relevance of Schoolwork), only three out of nine items loaded. This finding was also consistent with Arballo (2011). Conversely, both Appleton et al. (2006) and Betts et al. (2010) had nine while Waldrop (2012) had seven.

Three out of four Family Support for Learning items constituted Factor 3. Item 29 "My family/guardian(s) want me to keep trying when things are tough at university" cross-loaded between Factors 1 and 3. It was supposed to load in Factor 3, but since it loaded higher in Factor 1, it was grouped there despite it being unclear as to why it was so.

Factor 4 was comprised of four items from the Peer Support for Learning subscale. The other two items loaded into Factor 8 which would be explained further later on. Based on items 4, 6, 7, and 14, it can be said that these items pertain to how others perceive you. For example, Item 4 "Other students here like me the way I am," Item 6 "Other students at university care about me," Item 7 "Students at my university help me when I am in need," and Item 14 "Students here respect what I have to say."

Three out of nine Control and Relevance of School Work items make up Factor 5. These items refer to the reflection of one's ability. This can be evidently seen in Item 25 "When I do well in university it's because I work hard," Item 26 "The exams in my classes do a good job of measuring what I'm able to do," Item 35 "The grades in my classes do a good job of measuring what I'm able to do."

Interestingly, this study identified a new factor that may contribute to the SEI that was not discussed in prior studies. This factor contained three items, in which two were originally from Peer Support for Learning (Item 23 and 24) and one from Teacher-Student Relationships (Item 22). Item 22 "I enjoy talking to the lecturers here," Item 23 "I enjoy talking to the students here," Item 24 "I have some friends at university." As we can see, the commonality among these three items was the perceived relationship one has with others. In other words, this factor can be termed as "Sense of Belonging" or "Belongingness."

The idea of belonging is not new in academic literature. As Vallerand (1997) had pointed out, belonging involves subjective feelings of connectedness to the institution. Goodenow (1993a) on the other hand describe belongingness as "the extent to which students feel personally accepted, respected, included, and supported by others in the (school) social environment" (p. 80). Goodenow (1993b) also posited that belongingness is a student's sense of being accepted and valued by their teachers and in an academic setting. Furthermore, many studies in various countries have also indicated that the need for belonging is significantly associated with students' academic engagement (Osterman, 2000; Trowler & Trowler, 2010). The findings from this study suggest that a revised version of the SEI may be utilised to assess engagement among Malaysian undergraduates. Results indicate that an additional factor exists within the Malaysian sample, which is belongingness. Moreover, this study also found the SEI to be reliable cross-culturally albeit a few revisions. Since this study cements the notion that engagement is a multidimensional construct, there are numerous approaches for interventions to be made where necessary. Specifically, based on this study, the issue of engagement can be addressed to its six facets, namely Teacher-Student Relationships, Control and Relevance of Schoolwork, Peer Support for Learning, Future Aspirations and Goals, Family Support for Learning, and Belongingness.

This study is not without its limitations. First of all, Confirmatory Factor Analysis (CFA) was not conducted in this study. The purpose of the CFA is to confirm how well a hypothesised factor structure provides a good fit to the observed data (Kahn, 2006). As such, it is highly recommended that future studies take up the mantle to conduct CFA for further investigations regarding the factor structure of SEI among Malaysian undergraduates. Secondly, the sample involved in this study only accounts for students enrolled in the Arts stream such as Business and History majors whereas Science stream students such as Engineering and Medicine majors were neglected. In addition, the sample was only taken from one Malaysian university. Thus, the findings cannot be generalised to all Malaysian undergraduates and it is recommended that future studies also take into consideration students enrolled in the Science stream as well as students from other local higher learning institutions in order for the findings to have a higher external validity.

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